**The case of the soggy painting: this month, learn about solutes in solution**

SuperScience, March 2010

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[ILLUSTRATION OMITTED]

CHARACTERS

Narrator 1

Mr. Riley

Tessa

Kalona

Mr. Monet

Narrator 2

Narrator 3

Scene 1

Narrator 1: Mr. Riley looks around his apartment and surveys the bare walls. His two daughters, Kalona and Tessa, love to draw and paint. They're working on their art at a workbench in the corner.

Mr. Riley: Gifts, look at this place. We need to spruce it up with some art. I'd like to hang some of your paintings.

Tessa: That would be great, Dad. But maybe we should get some art from a real artist too.

Kalona: Speak for yourself, Tessa. I am a real artist.

Tessa: I mean a professional, silly\* We can get something for Mom.

Mr. Riley: I think that's a great idea, Tessa. In fact, I know an artist whose work I think your mother will love. We'll visit his studio. Then you two will get to see a pro at work.

Kalona: Hmph! I doubt we'll learn anything. But maybe something will inspire us.

Tessa (rolling her eyes): OK, Picasso. lust come along for the ride. Personally, I can't wait!

Scene 2

Narrator 2: The family arrives at the studio of Claude Monet, one of the town's most successful artists

Mr. Monet: Hello, Mr. Riley. Hi, gifts. Please make yourself at home. I just ask that you don't touch the paintings, as I have many works in progress.

Mr. Riley: No problem. Mind your manners, girls.

Narrator 2: While the family checks out the paintings, a tabby cat rubs against Kalona's leg. It looks unwell and keeps sneezing.

Kalona: Hi there, kitty. Aren't you feeling well?

Mr. Monet: Oh, you've met Oscar. He's a bit under the weather. We just got back from the vet, and I have some medicine for him. Hopefully he'll be better soon.

Tessa: What kind of medicine do you give a cat? Cough syrup?

Mr. Monet: No, this is made f specifically for cats. It's a powder that I have to mix with water to make a solution.

Mr. Riley: Girls, come over here and take a look at this painting.

Tessa: Oh, Mom will love that! Landscapes are her favorite.

Mr. Monet: I'm glad you like that one. It's almost complete and will be ready for sale in about a week. You should return then.

[ILLUSTRATION OMITTED]

Scene 3

Narrator 3: The Riley family returns to Mr. Monet's studio the following week to check on the painting's progress.

Mr. Monet: Welcome, I'm glad to see you again. Would you like something to drink?

Tessa: Do you have any iced tea?

Kalona: I'll take hot tea, please.

Mr. Monet: Yes, I can whip up two teas: one hot and one cold. Do you take sugar or honey?

Tessa and Kalona: Sugar, please!

Mr. Monet: I'll be right back.

Narrator 3: While Mr. Monet brews the tea, the Rileys discuss the painting they admired earlier.

Kalona: It's colorful, but he just uses watercolors. I could do better.

Tessa: Are you out of your mind? Look at the way he uses light and the softness of the shapes.

Mr. Riley: I agree with Tessa, Kalona. I think if you tried to do this yourself, you would understand how difficult it is.

Narrator 3: Mr. Monet returns and hands the girls their teas. The girls go off on their own to take a look around the studio while Mr. Monet discusses a price with their father. Suddenly, the men hear a loud clatter.

Mr. Riley: Sounds like trouble.

Narrator 3: The adults investigate and find Kalona and Tessa standing over an unfinished painting that's lying on the floor. A glass lies on the floor and tea is spilled over the painting.

Mr. Monet: My painting! What happened here?

Tessa: It wasn't me! Kalona criticized your painting and I defended it. She got mad and dropped her glass.

Kalona: That's not true! Tessa's glass slipped out of her hand. Narrator 3: Mr. Monet picks up the glass and looks inside.

Mr. Monet: I know who spilled the tea on my painting. And I can prove it!

--By Elizabeth Carney

solve the mystery

Who dropped a glass of tea on Mr. Monet's painting?

To solve the mystery, grab these materials:

\* Two 8-ounce glasses

\* Hot water (prepared by your teacher)

\* Ice water

\* SPOOR

\* Measuring spoons

\* Sugar

\* Clock or stopwatch

Fill one glass with hot water and the other with ice water. Add 15 milliliters (1 tablespoon) of sugar to each glass. Stir well and wait two minutes for the mixture to settle. Examine the bottom of both glasses. The one with more sugar granules on the bottom indicates who the culprit is.

PHYSICAL SCIENCE

THE CASE OF THE SOGGY PAINTING

ESTIMATED TIME: 20 minutes

BEFORE READING

Set a Purpose

Read a fictional science mystery to observe how temperature affects solubility. Then perform the experiment and use deductive reasoning to solve the mystery.

Background

\* When a substance dissolves, it breaks into molecules and mixes with the molecules of the substance in which it is being dissolved. The dissolved particles are too small to be seen with the naked eye; therefore, the solute may seem to disappear.

AFTER READING

Conclusion

Temperature can affect how completely a substance will dissolve in a solution. For example, it is possible to dissolve sugar into ice water. But sugar dissolves more easily and completely in heated water. That's because at higher temperatures, water molecules move faster and spread farther apart. This allows sugar molecules to bind to the water molecules more easily. When Mr. Monet inspects the fallen glass, he sees granules of sugar at the bottom. Since the sugar didn't dissolve fully in cold water, Mr. Monet knew that the iced-tea drinker was the one who dropped the glass. That's Tessa!

Discussion Question

\* A solution is a mixture in which two or more substances are completely dissolved. A suspension is a mixture where particles of the solute don't dissolve. Which of the following is a suspension: sugar and water, salt and water, sand and water? (Answer: Sand and water.)

RESOURCE

\* www.chem4kids.com/files/matter\_solution.html Visit this site to learn more about solutions.

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